AMENDMENTS TO THE SPECIFICATION:

Please replace the paragraph on page 5, beginning line 17 with the following paragraph:

A2

It is impossible for the conventional die-to-die comparison method to inspect whether or not the OPC patterns effectively serve as corrective modification for the pattern on the wafer. Therefore, ~~there is being required~~ a solution is required for this problem, for example, a method whereby the comparative examination between the pattern on the wafer and the design data can be performed considering an allowable pattern deformation quantity.

Please replace the paragraph beginning on line 20, page 22 and ending on line 12, page 23 with the following paragraph:

A3

As data to be compared with the pattern image to-be-inspected, the design data is used. As an example of this design data, ~~one such that~~ CAD layout data in a GDS format is modified through layer-merging or fracturing ~~can be used~~. In this embodiment, a bundle of line segments obtained by this processing is clipped with [[an]] a rectangular area whose one side is equal to the side of the image size plus an error of the stage and the maximum parallel shift quantity of the pattern to define the reference pattern, which is stored in the recipe database 22 beforehand. If the error of the stage can be neglected compared to the maximum parallel shift quantity of the pattern, the absolute coordinate values of the pattern deformation can be measured. In this embodiment, the reference pattern is set to be larger than the pattern image to-be-inspected considering the error of the stage and the maximum parallel shift quantity of the pattern to perform

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A3

the processing. Alternatively, the pattern image to-be-inspected may be set to be larger than the reference pattern to perform the processing.

Please replace the paragraph on page 24, beginning line 5 with the following paragraph:

A4

If a curve (solid lines in Fig. 50) demarcating the shape of the exposed pattern obtained by litho-simulator is used as the reference pattern, the defect inspection can be performed while the validity of the simulation is being examined. Output data of a litho-simulator is a light intensity distribution obtained through optical simulation. The curves of the shape are obtained from this distribution. For the allowable pattern deformation in this case, an error that is allowed in the simulation is set.

Please replace the paragraph beginning on line 11, page 39 and ending on line 2, page 40 with the following paragraph:

A5

Comparing the evaluation value F_o and the evaluation values F_a, F_b, the evaluation value F_o ~~suits~~ is suited for the high-speed processing because the data is scalar. On the other hand, the evaluation values F_a and F_b are effective, for example, in the case as shown in Fig. 35A and Fig. 35B. That is, when the evaluation values F_a and F_b are used, since the inner product between the edge vector of vertical line part of the reference pattern (Fig. 35A) and the edge vector of the horizontal line part of the pattern image to-be-inspected (Fig. 35B) becomes close to zero, a part 101 and a part 102 can be matched successfully. On the contrary, when the evaluation value F_o is used, since only the amplitude is used to make the judgment regardless of the direction, the part 101 and a part 103 are likely to be matched erroneously.

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Please replace the paragraph beginning on line 17, page 46 and ending on line 7, page 47 with the following paragraph:

For a method to determine the defective area, there is a conceivable method for determining the defective area (determination method A) where an area is determined from the edges of the pattern image to-be-inspected that the inspection part failed to assume the correspondence to the edges of the reference pattern and this area is determined as the defective area. This method is effective in detecting the defect having distinct edges. However, since this method is weak in detecting the defect having indistinct edges, for such a case, a better suited ~~is a~~ method (determination method B) is where an area is determined from the edges of the pattern image to-be-inspected that have been assumed to be in the correspondence to the edges of the reference pattern and a part of that area whose distribution of the pixel luminance value is non-uniform is determined as the defective area. That is, the defect is determined from abnormality of the luminance value distribution.

Please replace the paragraph on page 49, beginning line 24 and ending on page 51, line 7 with the following paragraph:

The defect-class determination part 14 can perform automatic classification of the defect classes as follows. That is, the geometrical feature quantities of the clustered pixels that were determined as defects are obtained. Based on these, a shape feature such as being circular, being elongated, etc. can be grasped, and if the shape is circular, the defect is judged to be the alien substance, if being elongated, the defect is judged to be a scratch, and the like. The pixels that were judged to be defects are classified into three classifications: pixel inside the pattern; pixel outside the pattern;

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and pixel on the boundary. For each classification, the features quantities of the pixels are obtained by using the pixel luminance values of the pattern image to-be-inspected, which were initially obtained. If the pixel is judged to be the alien substance based on the feature quantities obtained at this stage (for example, the geometrical feature quantities), there can be judged whether the alien substance is a metal piece or organic material (for example, human scale) or the like. That is, the defect class can be judged from a fact: if the alien substance is a metal, it looks bright because of its strong reflection; and if it is the organic material, it looks dark. Further, in the case where the alien substance exists inside the pattern, when the pixels judged to be the alien substance show large variation in the luminance, it is judged that the alien substance concerned is very likely to exist on the pattern; when such pixels show small variation in the luminance, it is judged that the alien substance concerned is very likely to exist beneath the pattern. This is difficult processing for the conventional die-to-die method to achieve. The present method uses these feature quantities to judge the defect class by a well-known classification method. For the classification method, a technique whereby the defect class is judged by comparing the defect with the defect-class reference image database using a k ~~shortest path length~~ nearest neighbor method is effective.

A7

Please replace the paragraph on page 61, beginning line 25 and ending on page 62, line 18 with the following paragraph:

After the above-described edge positions are obtained, those positions are approximated with curves (including the polygon approximation) to define the second edges. The simplest method for this purpose is to link those positions simply with

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segment lines (polygonal lines). However, as a method to link the positions smoothly using a least-squares method, for example, the following method can be used. That is, as shown in Fig. 54A, the ~~split-fusion~~ split-and-merge method disclosed in T. Pavlidis and S. L. Horowitz: "Segmentation of plane curves," IEEE Trans. on Computers, vol. C-23, No. 8, Aug., 1974 can be used. Alternatively, a curve approximation based on smoothing of plane data using the least-squares method and a two-dimensional spline function, as shown in Fig. 54B, can also be used. The former can be processed rapidly, but has little flexibility for shapes containing a lot of rounded parts. ~~One~~ On the other hand, the latter can fulfill the rapidity and is characteristically flexible. Besides these techniques, various methods such as a method using a Fourier descriptor and the like have been disclosed and one of these can substitute for the above techniques.

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